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| 10/509,493 | 09/29/2004 | Takenobu Arima | L9289.04158 | 5357 |

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| EXAMINER | |
|---|---|
| BROOKS, SHANNON | |

| ART UNIT | PAPER NUMBER |
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| 2617 | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/509,493 | ARIMA ET AL. | |
| | Examiner | Art Unit | |
| | Shannon R. Brooks | 2617 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *6/28/07*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-3 and 5-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 5-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 September 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments filed 6/28/07 have been fully considered but they are not persuasive.

The Applicant argues that Stolyar discloses scheduling the transmission of data packets to communication partners according to a respective weight, $c_i$, that characterizes the quality of transmission paths to the communication partners, and that the weight ,$c_i$, represents a transmission power required to transmit data to a respective partner along the paths. However, Stolyar actually discusses $c_i$, as a prior art channel condition weight that does not consider significant fluctuations in channel conditions (Pg. 1, Art Background). Further, Stolyar states a need for a channel condition weight that will provide the ability to queue packets with stability in the presence of such fluctuations. Therefore, Stolyar introduces a weighted delay variable, $c_i(t)$, that takes into account an explicit time dependence for fast and slow fading over transmission paths and computes and applies it to each queue (Col. 4, lines 38-64). Applicant argues further that Stoyler discloses giving a higher transmission priority to communication partners whose transmission paths are poor as determined by the respective weights,$c_i$. However, as previously stated, Stayler introduces a weighted delay variable, $c_i(t)$, that takes into account an explicit time dependence for fast and slow fading time effects over transmission paths and computes and applies it to each packet queue. Stoyler does not use $c_i$. The applicant concludes that, based on the aforementioned arguments, Stolyar and Mandyam ,alone or in combination, do not teach the claimed feature of assigning transmission priorities based on detected rates of change of transmission path conditions. However, Stoyler and Mandyam clearly teach assigning

transmission priorities based on detected rates of change by teaching channel quality weights that consider time dependent path fluctuations in scheduling packets. Therefore, Stoyler and Mandyam, alone or in combination, teach the argued limitations.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. **Claims 1-7, and 10-11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Stolyar (US 6590890 B1) in view of Mandyam (US 6931256 B2).

Consider **Claim 1**, Stolyar teaches a scheduling apparatus creating a schedule for a base station apparatus transmitting packet data on a common channel to one or more communication

partners, the scheduling apparatus comprising: a detecting section that detects changes in corresponding transmission path conditions **(Col. 4, lines 7-67, Col. 5, lines 1-67, and Col. 6, lines 1-25)**; and a scheduling section that determines an order in which the packet data is transmitted earlier to a communication partner whose transmission path condition changes rapidly (read as due to fast fading, Col. 4, lines 24-60) and packet data is transmitted later to a communications partner whose transmission path condition changes slowly (read as due to slow fluctuation, Col. 4, lines 24-60), based on the detected changes in the transmission path conditions **(Col. 4, lines 47-67, Col. 5, lines 1-67, and Col. 6, lines 1-25, and Figs. 1 and 2)**.

Stolyar teaches receiving and does not specifically and definitively teach detecting. However, Mandyam teaches detecting **(Col. 5, lines 38-49).**

Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the teaching of Mandyam into Stolyar in order to allow measurement through a detector **(Col. 5, lines 38-49)**.

Consider **Claim 11**, Stolyar teaches a schedule creating method which creates a schedule for a base station apparatus to transmit packet data on a common channel to one or more communication partners, the method comprising: detecting changes in corresponding transmission path conditions **Col. 4, lines 7-67, Col. 5, lines 1-67, and Col. 6, lines 1-25)**; determining an order in which the packet data is transmitted such that packet data is transmitted earlier to a communication partner whose transmission path condition changes rapidly (read as considering fast fading over the transmission path in scheduling, Col. 4, lines 24-60) and packet data is transmitted later to a communication partner whose transmission path condition changes slowly (read as considering slow fluctuations over the transmission path in scheduling, Col. 4,

lines 24-60) based on the detected changes in the transmission path conditions (Col. 4, lines 24-60); and transmitting the packet data according to the transmit order**(Col. 4, lines 47-67, Col. 5, lines 1-67, and Col. 6, lines 1-25, and Figs. 1 and 2)**.

Stolyar teaches receiving and does not specifically and definitively teach detecting. However, Mandyam teaches detecting **(Col. 5, lines 38-49).**

Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the teaching of Mandyam into Stolyar in order to allow measurement through a detector **(Col. 5, lines 38-49)**.

Consider **Claim 2**, Stolyar teaches the scheduling apparatus, wherein said scheduling section determines an order at which to transmit packet data to be retransmitted, from a corresponding transmission path condition **(Col. 3, lines 51-67, Col. 4, lines 1-67, and Cols. 5-8)**.

Consider **Claim 3**, Stolyar teaches the scheduling apparatus, wherein said scheduling section determines an order at which to transmit packet data to be retransmitted within a specified time **(Col. 3, lines 51-67, Col. 4, lines 1-67, and Cols. 5-8**.

Consider **Claim 5**, Stolyar teaches the scheduling apparatus, wherein said scheduling section does not take into account a change in a transmission path condition when determining the order in which to transmit the packet data if the change in the transmission path condition is more rapid than a predetermined speed **(read as a scaled delay related to fast6 and slow fading, Col. 6, lines 3-24).**

Consider **Claim 6**, Stolyar teaches the scheduling apparatus, wherein said detecting

section detects a change in a transmission path condition by measuring a fading Doppler frequency **(Col. 4, lines 47-64).**

Consider **Claim 7**, Stolyar teaches the scheduling apparatus, wherein said detecting section detects a change in a transmission path condition by measuring a change in receive quality of a signal transmitted from a communication partner (read as carrier-to-interference ratio, ***(Col. 6, lines 3-35)***.

Consider **Claim 8**, Stolyar teaches a control station apparatus comprising: a scheduling apparatus **(Col. 3, lines 51-67, Col. 4, lines 1-67, and Cols. 5-8.)**
; except that it does not specifically teach a transmit section that transmits packet data according to a schedule created by said scheduling apparatus.

However, Wei teaches a transmit section that transmits packet data according to a schedule created by said scheduling apparatus **(Pg. 3, [0028]-[0029] and Fig. 2)**.

Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the teachings of Wei into Stolyar in order to allow adjustments of data rates and scheduling **(Pg. 3, [0030]).**

5. **Claims 9 and 10** are rejected under 35 U.S.C. 103(a) as being unpatentable over Stolyar (US 6590890 B1) in view of Mandyam (US 6931256 B2) and further in view of Wei (US 2003/0204615 A1).

Consider **Claim 9**, Stolyar teaches a base station apparatus comprising: a scheduling apparatus **(Col. 4, lines 65-67, Col. 5, lines 1-67, and Col. 6, lines 1-14)**; except that it does not specifically teach a transmit section that transmits packet data according to a schedule created by said scheduling apparatus.

However, Wei teaches a transmit section that transmits packet data according to a schedule created by said scheduling apparatus **(Pg. 3, [0028]-[0029] and Fig. 2)**.

Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the teachings of Wei into Stolyar in order to allow adjustments of data rates and scheduling **(Pg. 3, [0030]).**

Consider **Claim 10**, Stolyar teaches a communication system comprising: a scheduling apparatus **(Col. 3, lines 51-67, Col. 4, lines 1-67, and Cols. 5-8)**.

## *Conclusion*

2. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

**Hand-delivered responses** should be brought to

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Randolph Building

401 Dulany Street

Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shannon Brooks whose telephone number is (571) 270-1115. The examiner can normally be reached on Monday - Friday, 8:00 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Appiah can be reached on (571) 272-7904. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Shannon R. Brooks

October 12,2007

CHARLES N. APPIAH
SUPERVISORY PATENT EXAMINER